Prediction vs. Inference

STAT 245

Where are we?

- Is model appropriate for data?
- **Now: Are predictors really associated with response?**

Our way: ONE Model

- Choose predictors/response wisely
- Fit one full model
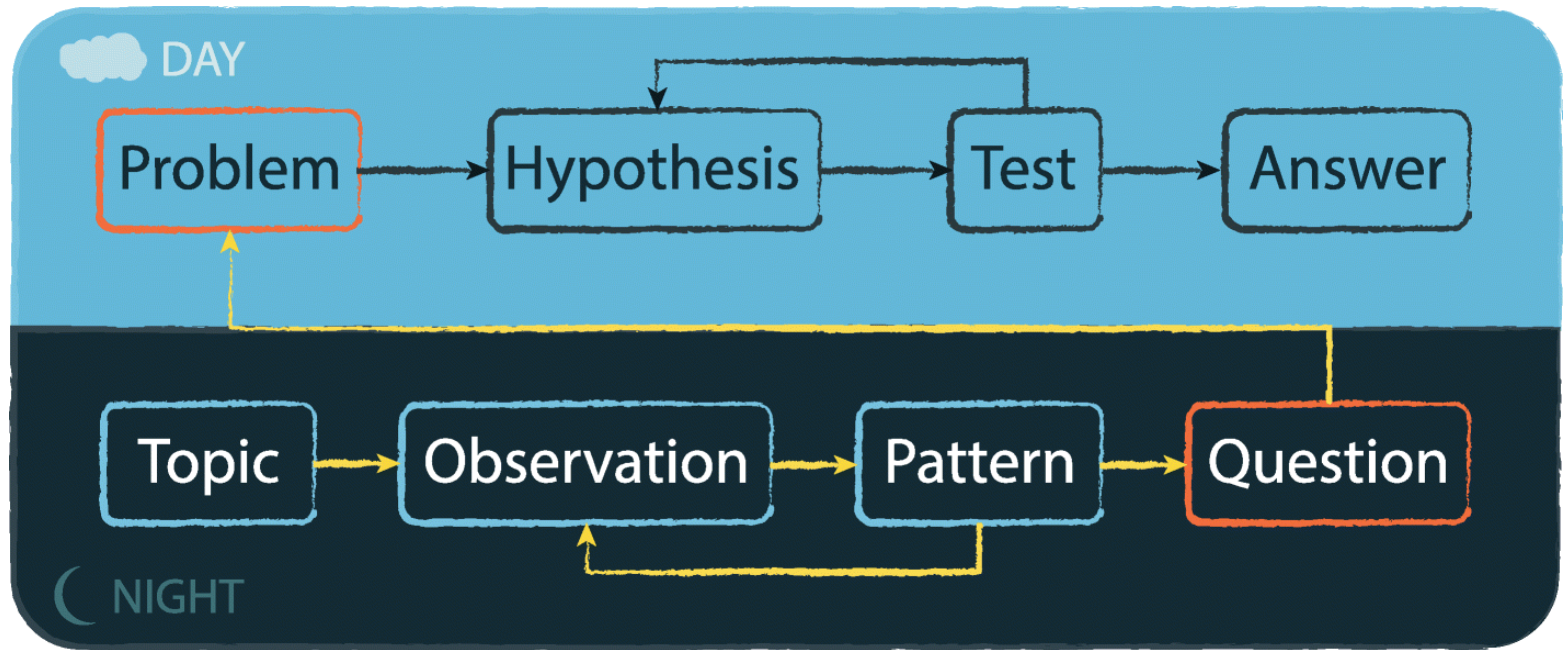- Report equation, CIs, prediction plots

Why ONE Model?

- Data-based changes to model (especially simplifications) change inferences/conclusions!
- Bias toward larger model, overfitting
- Keep your brain "on" at all times

Goals + Selection Approaches Oversimplified

Goal	Selection	Who
Inference (Hyp. Test, CI)	One model	Statistics+
Out-of-set Prediction	Cross-validation, model averaging	Data Science+
Parsimony?	~~Stepwise selection~~	Eep, could be any of us

Day & Night Science

From Itai Yanai and Martin Lercher 2019, *What is the Question?*

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